



THERMAL MANAGEMENT

## **MLC-SC Air-Cooled Scroll Chillers**

100 – 285 Tons

**motivaire**<sup>™</sup>  
by Schneider Electric



# The Ultimate Solution For Optimal Energy Savings

The pioneer of free-cooling chiller technology, Motivair's MLC-FC Chillers are ETL-Tested and Listed to current UL & CSA standards

**The Motivair® MLC-SC-FC chillers with integrated “Free-Cooling” are designed to provide the owner with optimal performance, year round, in varying ambient temperatures.**

### AVAILABLE MODELS

This “Free-Cooling” option, available on all MLC-SC models and comes standard with Motivair's advanced PLC control package – a unique single package for year-round energy savings.

### HOW THE SYSTEM WORKS

The high efficiency scroll compressor plant is designed to cool the designated heat load during summer months.

When ambient temperatures fall overnight or during cooler seasonal weather, the integrated “Free-Cooling” system is automatically activated.

The system operates by directing the return chilled glycol through the “Free-Cooling” coil, before it enters the evaporator.

This is achieved via an automatic motorized valve, controlled by the PLC, whenever the ambient falls below the return chilled glycol temperature set point.



The glycol is either partially or completely cooled in the “Free-Cooling” coil for maximum energy savings.

### THE BENEFITS OF FREE COOLING

As a result, less mechanical refrigeration is required to achieve the chilled glycol set point, and the scroll compressors are staged down and eventually turned off by the PLC, which continuously monitors the system.

Energy savings in areas with cooler winter months are substantial. The ability to allow the compressors to stage off in cooler weather further drives overall chiller efficiencies.

Wear and tear on chiller components is dramatically reduced, due to fewer start-ups and running hours during winter months.

Automatic switching between mechanical cooling and “Free-Cooling” is seamless, which allows optimal performance year round.

As a general rule of thumb, “Free-Cooling” savings more than pay for the initial investment in the first year of operation

## Designed with Purpose

### 1 SCROLL COMPRESSORS

Multiple high efficiency scroll compressors with R-410A refrigerant. Designed to operate at high efficiency across the entire operating range with lower sound and vibration than traditional compressors. Unique scroll compressor design allows for resistance to liquid slugging.

### 2 CONDESNER FAN & MOTORS

Each fan features Electronically Commutated (EC) variable speed motor technology, globally recognized as the most efficient axial fans available in today's HVAC market.

More efficient than VFD speed control, EC motors offer the highest efficiencies and added chiller redundancy.

These exceptionally reliable motors feature a reversed stator and rotor, which eliminates the traditional fan motor shaft. The outer shell of the motor is the rotating body, to which the fan blades are bolted.

This unique arrangement reduces torque stress on the blades, eliminates fan blade stress fractures, maximizes airflow and maintains efficiency over the entire fan performance curve.

### 3 EVAPORATORS

V-Coil profile constructed from seamless copper tubes expanded into aluminum fins creates a high efficiency design with minimal pressure drop. Coils are easily maintained with access through removable panels.

Optional Free-Cooling features exclusive integrated condenser/free-cooling coil with ultra-low pressure drop and inherent redundancy. Modular design creates opportunities for custom coil configurations.

### 4 ADDITIONAL OPTIONS

Shell and tube evaporator features two independent refrigeration circuits (optional 3 circuit design available). Low pressure drop design on both the water and refrigerant circuits creates maximum efficiency. Custom profile options allow for a wide operating range under various design conditions.



# Gain Speed to Insight with Centurion Monitoring System

Available on select Motivair chillers as an optional feature, the Centurion<sup>™</sup> Monitoring System provides owners access to critical data and a range of safeties measures.

## FEATURES

1

### DATA TRENDING

#### CENTURION MONITORING SYSTEM

This optional feature empowers the owner by providing a wide range of safeties and access to critical data from a remote location via cellular service, outside of the customer's firewall.

If the chiller is operating in an unsafe condition or in the unlikely event of an alarm, designated contacts are immediately notified by the chiller of its condition. The pending alarm can then be avoided or quickly corrected.

#### FEATURES:

- Data trending
- Password protected multi-level access
- Adjustable warning thresholds
- Backed by the security of AWS cloud services and T-Mobile/AT&T cellular networks

The MLC-SC range features the PCO5 control system, which is an advanced Programmable Logic Controller, with a base-operating platform that can be easily modified to adapt to various applications.

A multi-character LCD display, and easy to follow directional prompts, gives the operator complete control over all chiller functions.

Multiple digital and analog inputs as well as digital and PWM outputs offer

2

### ADJUSTABLE WARNING THRESHOLDS

3

### PASSWORD-PROTECTED MULTI-LEVEL ACCESS



unparalleled control possibilities.

#### BOARD INTELLIGENT CHILLER RESPONSE

The latest generation of Motivair<sup>®</sup> software allows the chillers to respond to system changes in real time and to adjust performance accordingly.

The proprietary control logic in the MLC-SC or MLC-SC-FC chillers provides:

- Automatic restart after a power outage
- Rapid restart of refrigeration

compressors after a power outage, while affording maximum compressor protection

- Selective decision on which compressor(s) to start first based on run-time and fastest possible response to system load
- Liquid injection to the compressors under high ambient operation
- Seamless transition between refrigeration and optional Free Cooling mode based on system load, chilled water temperature, ambient temperatures and installation profile.

#### CONTROL FEATURES:

- |                               |                                |                                     |                                                                                        |
|-------------------------------|--------------------------------|-------------------------------------|----------------------------------------------------------------------------------------|
| ■ Highly visible LCD display  | ■ Adjustable water set point   | ■ Low refrigeration pressure alarm  | ■ RS 232/RS 485 communication                                                          |
| ■ Tactile push-buttons        | ■ Supply water temp. display   | ■ High refrigeration pressure alarm | ■ Ethernet Communication                                                               |
| ■ Adjustable alarm set points | ■ Return water temp. display   | ■ Irregular voltage alarm           | ■ LON, BACNET, MODBUS communication (optional) MLC & MLC-FC CONTROLS PCO5 Display PCO5 |
| ■ °F/°C selectable            | ■ Low water temperature alarm  | ■ General Alarm Relay               |                                                                                        |
| ■ Compressor Lead/Lag control | ■ Freeze alarm                 | ■ Remote Start/Stop Relay           |                                                                                        |
| ■ Anti-Compressor short cycle | ■ Low water/glycol flow alarm  | ■ Manual alarm reset                |                                                                                        |
| ■ Compressor failure alarm    | ■ High water temperature alarm |                                     |                                                                                        |

# Application Defined Features & Options



**OPTIONAL DUPLEX PUMPS**



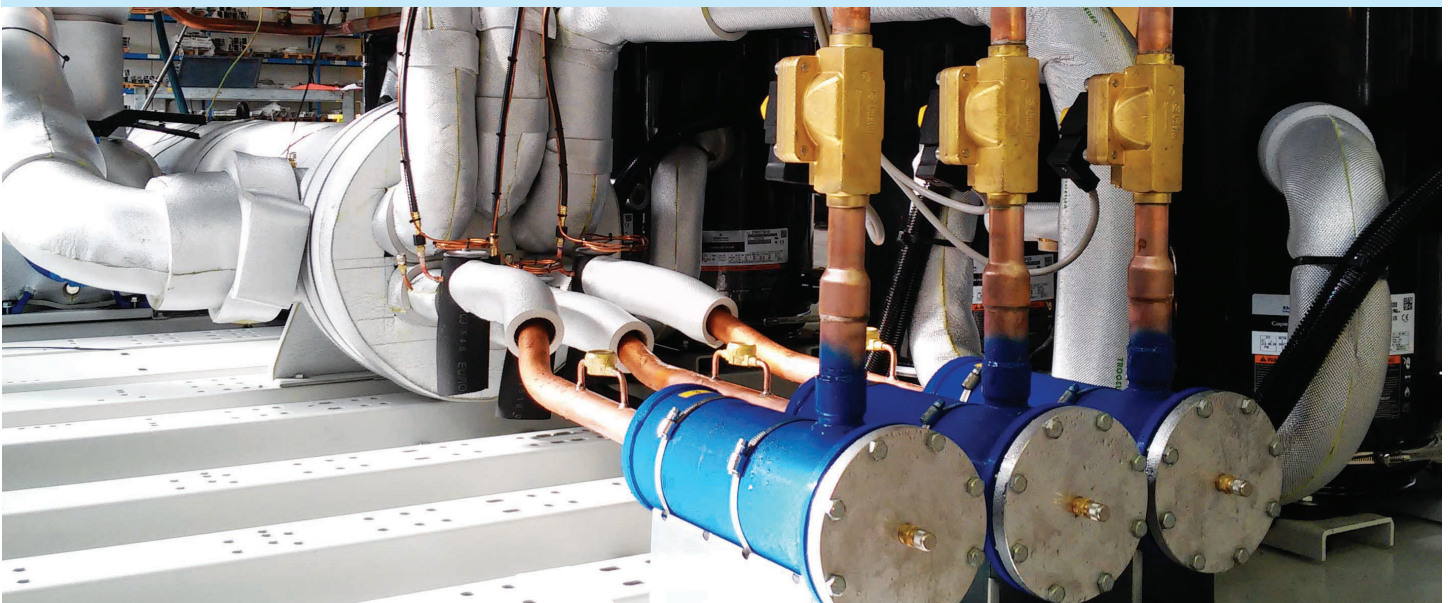
**OPTIONAL STORAGE TANK**

## STANDARD FEATURES:

- R-410A Refrigerant
- Factory Installed Flow Switch
- Locking Disconnect Switch
- Phase and Power Monitoring
- Advanced PLC Control System
- Heavy Duty Galvanized Steel Frame with Baked Powder Epoxy Coat Finish
- Designed for Easy Service Access
- Electrical Panel Heating & Cooling System

- Simplex (1) Pump Package
- Duplex (2) Pump Package
- Storage Tank
- 3x Refrigeration Circuits
- Low Noise Package
- Ultra Low Noise Package
- High Ambient Package
- Stainless Steel Cabinet Construction
- Condenser Coil Coating
- Security Guards for Open Areas
- Integrated Free-Cooling System

## OPTIONAL 3X REFRIGERATION CIRCUITS





| MLC-SC-A CHILLER RANGE WITH SCROLL COMPRESSORS |         | MLC-SC | 200                                                                          | 270     | 340       | 390       | 460       | 490       | 510       | 560       | 600       | 660       | 690       | 820       | 930       | 1100      | 1150      |
|------------------------------------------------|---------|--------|------------------------------------------------------------------------------|---------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| Nominal Cooling Capacity*                      | BTU/HR  |        | 825,244                                                                      | 988,899 | 1,207,163 | 1,336,735 | 1,466,341 | 1,691,402 | 1,834,600 | 1,953,961 | 2,185,851 | 2,318,838 | 2,434,784 | 2,932,648 | 3,109,964 | 3,607,829 | 3,805,636 |
| Nominal Cooling Capacity                       | TON     |        | 69                                                                           | 82      | 101       | 111       | 122       | 141       | 153       | 163       | 182       | 193       | 203       | 244       | 259       | 301       | 317       |
| Type Of Refrigerant                            | TYPE    |        | R-410a                                                                       |         |           |           |           |           |           |           |           |           |           |           |           |           |           |
| Number Of Refrigerating Circuits               | QTY     |        | 2                                                                            | 2       | 2         | 2         | 2         | 2         | 2         | 2         | 2         | 2         | 2         | 3         | 3         | 3         | 3         |
| Total Compressor Running Current               | A       |        | 112                                                                          | 149     | 160       | 186       | 217       | 232       | 260       | 288       | 301       | 332       | 365       | 431       | 482       | 477       | 521       |
| Number Of Compressors                          | QTY     |        | 4                                                                            | 4       | 4         | 4         | 4         | 4         | 6         | 6         | 6         | 6         | 6         | 9         | 9         | 9         | 9         |
| Capacity Steps                                 | QTY     |        | 4                                                                            | 4       | 4         | 4         | 4         | 4         | 4         | 4         | 4         | 4         | 4         | 6         | 6         | 6         | 6         |
| EVAPORATOR                                     |         |        | Shell & Tube                                                                 |         |           |           |           |           |           |           |           |           |           |           |           |           |           |
| Nominal Flow Rate                              | GPM     |        | 183                                                                          | 219     | 267       | 296       | 325       | 375       | 407       | 433       | 484       | 514       | 540       | 650       | 689       | 799       | 843       |
| Pressure Drops (Evaporator + Valves + Piping)  | PSI     |        | 10                                                                           | 8       | 10        | 9         | 9         | 11        | 10        | 10        | 10        | 10        | 9         | 10        | 9         | 11        | 10        |
| PUMP & TANK (OPTIONAL)                         |         |        | Simplex or Duplex Pump Options, Carbon Steel or Stainless Steel Tank Options |         |           |           |           |           |           |           |           |           |           |           |           |           |           |
| Maximum Pump Absorbed Power                    | KW      |        | 7.5                                                                          | 11      | 11        | 15        | 15        | 18.5      | 18.5      | 18.5      | 22        | 22        | 30        | 30        | CF        | CF        | CF        |
| Maximum Pump Absorbed Current                  | A       |        | 13.2                                                                         | 20.3    | 20.3      | 26.9      | 26.9      | 32.1      | 32.1      | 32.1      | 39.5      | 39.5      | 52        | 52        | CF        | CF        | CF        |
| Available External Pressure (Single)           | PSI     |        | 32.2                                                                         | 36.9    | 35.0      | 40.3      | 36.7      | 33.6      | 31.8      | 33.2      | 42.7      | 43.5      | 38.6      | 31.3      | CF        | CF        | CF        |
| Tank Volume                                    | GAL     |        | 79                                                                           | 100     | 100       | 132       | 132       | 132       | 132       | 132       | 159       | 159       | 159       | 159       | 159       | 159       | 159       |
| FANS & CONDENSER                               |         |        | Axial EC Fans & Copper Tube with Aluminum Fin Condenser                      |         |           |           |           |           |           |           |           |           |           |           |           |           |           |
| Fan Electronic Fan Speed Control               | TYPE    |        | EC                                                                           |         |           |           |           |           |           |           |           |           |           |           |           |           |           |
| Fan Quantity                                   | QTY     |        | 4                                                                            | 4       | 6         | 6         | 6         | 8         | 8         | 8         | 10        | 10        | 10        | 12        | 12        | 18        | 18        |
| Fan Total Absorbed Power                       | KW      |        | 10.2                                                                         | 10.2    | 15.4      | 15.4      | 15.4      | 20.5      | 20.5      | 20.5      | 25.6      | 25.6      | 25.6      | 30.7      | 30.7      | 46.1      | 46.1      |
| Fan Total Absorbed Current                     | A       |        | 15.6                                                                         | 15.6    | 23.4      | 23.4      | 23.4      | 31.2      | 31.2      | 31.2      | 39.0      | 39.0      | 39.0      | 46.8      | 46.8      | 70.2      | 70.2      |
| Total Air Flow                                 | CFM     |        | 51,324                                                                       | 51,324  | 76,986    | 76,986    | 76,986    | 102,648   | 102,648   | 102,648   | 128,310   | 128,310   | 128,310   | 153,972   | 153,972   | 230,958   | 230,958   |
| NOISE DATA                                     |         |        | Distance measured in an open field at 33 feet from Condenser                 |         |           |           |           |           |           |           |           |           |           |           |           |           |           |
| Sound Pressure Level                           | DB(A)   |        | 68.1                                                                         | 70.0    | 70.3      | 70.0      | 72.0      | 73.7      | 71.7      | 71.5      | 73.4      | 74.4      | 75.3      | 73.3      | 74.8      | 76.4      | 77.2      |
| ELECTRICAL DATA                                |         |        | Does not include optional pump(s)                                            |         |           |           |           |           |           |           |           |           |           |           |           |           |           |
| Power Circuit                                  | V/PH/HZ |        | 460/3/60                                                                     |         |           |           |           |           |           |           |           |           |           |           |           |           |           |
| Full Load Current (FLA)                        | FLA     |        | 128                                                                          | 165     | 184       | 209       | 241       | 263       | 291       | 319       | 340       | 371       | 404       | 478       | 529       | 547       | 591       |
| Minimum Circuit Ampacity (MCA)                 | MCA     |        | 135                                                                          | 174     | 194       | 221       | 254       | 277       | 302       | 331       | 353       | 385       | 419       | 490       | 542       | 560       | 606       |
| Maximum Overcurrent Protection (MOP)           | MOP     |        | 163                                                                          | 211     | 234       | 268       | 309       | 335       | 346       | 379       | 403       | 440       | 480       | 538       | 596       | 613       | 664       |
| DIMENSIONS & WEIGHTS                           |         |        |                                                                              |         |           |           |           |           |           |           |           |           |           |           |           |           |           |
| Length                                         | IN      |        | 127                                                                          | 127     | 178       | 178       | 178       | 230       | 230       | 230       | 281       | 281       | 281       | 332       | 332       | 471       | 471       |
| Width                                          | IN      |        | 87                                                                           | 87      | 87        | 87        | 87        | 87        | 87        | 87        | 87        | 87        | 87        | 87        | 87        | 87        | 87        |
| Height                                         | IN      |        | 96                                                                           | 96      | 96        | 96        | 96        | 96        | 96        | 96        | 96        | 96        | 96        | 96        | 96        | 96        | 96        |
| Estimated Shipping Weight                      | LBS.    |        | 5,732                                                                        | 5,732   | 7,341     | 7,341     | 7,341     | 9,789     | 9,789     | 9,789     | 12,236    | 12,236    | 12,236    | 15,939    | 15,939    | 22,024    | 22,024    |
| Hydraulic Connections (Inlet/Outlet)           | IN      |        | 5                                                                            | 5       | 5         | 6         | 6         | 6         | 6         | 6         | 6         | 6         | 8         | 8         | 8         | 8         | 8         |

| MLC-SC-FC CHILLER RANGE WITH SCROLL COMPRESSORS         |         | MLC-SC-FC | 200                                                                          | 270       | 340       | 390       | 460       | 490       | 510       | 560       | 600       | 660       | 690       | 820       | 930       | 1100      |
|---------------------------------------------------------|---------|-----------|------------------------------------------------------------------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| Nominal Cooling Capacity*                               | BTU/HR  |           | 777,500                                                                      | 1,023,017 | 1,142,377 | 1,343,566 | 1,476,553 | 1,595,913 | 1,817,558 | 1,933,504 | 2,148,353 | 2,274,509 | 2,485,943 | 3,024,722 | 3,222,495 | 3,413,471 |
| Nominal Cooling Capacity                                | TON     |           | 65                                                                           | 85        | 95        | 112       | 123       | 133       | 151       | 161       | 179       | 190       | 207       | 252       | 269       | 284       |
| 100% Free Cooling Ambient Temperature                   | °F      |           | 29                                                                           | 33        | 30        | 33        | 31        | 29        | 32        | 30        | 32        | 30        | 32        | 33        | 32        | 30        |
| Type Of Refrigerant Gas                                 | TYPE    |           | R-410a                                                                       |           |           |           |           |           |           |           |           |           |           |           |           |           |
| Number Of Refrigerating Circuits                        | QTY     |           | 2                                                                            | 2         | 2         | 2         | 2         | 2         | 2         | 2         | 2         | 2         | 2         | 3         | 3         | 3         |
| Total Compressor Running Current                        | A       |           | 119                                                                          | 144       | 171       | 185       | 215       | 249       | 263       | 291       | 308       | 339       | 357       | 416       | 461       | 509       |
| Number Of Compressors                                   | QTY     |           | 4                                                                            | 4         | 4         | 4         | 4         | 4         | 6         | 6         | 6         | 6         | 6         | 9         | 9         | 9         |
| Capacity Steps                                          | QTY     |           | 4                                                                            | 4         | 4         | 4         | 4         | 4         | 4         | 4         | 4         | 4         | 4         | 6         | 6         | 6         |
| EVAPORATOR                                              |         |           | Shell & Tube                                                                 |           |           |           |           |           |           |           |           |           |           |           |           |           |
| Nominal Flow Rate                                       | GPM     |           | 172                                                                          | 227       | 253       | 298       | 327       | 354       | 403       | 428       | 476       | 504       | 551       | 670       | 714       | 756       |
| Pressure Drops (Evaporator + Valves + Piping)           | PSI     |           | 11                                                                           | 11        | 12        | 11        | 12        | 12        | 12        | 12        | 11        | 11        | 12        | 13        | 13        | 13        |
| F.C. Pressure Drop (F.C. Coil + Evap + Valves + Piping) | PSI     |           | 18                                                                           | 20        | 19        | 20        | 23        | 21        | 22        | 20        | 21        | 19        | 22        | 22        | 23        | 21        |
| PUMP & TANK (OPTIONAL)                                  |         |           | Simplex or Duplex Pump Options, Carbon Steel or Stainless Steel Tank Options |           |           |           |           |           |           |           |           |           |           |           |           |           |
| Maximum Pump Absorbed Power                             | KW      |           | 7.5                                                                          | 11        | 11        | 15        | 15        | 18.5      | 18.5      | 18.5      | 22        | 22        | 30        | 30        | CF        | CF        |
| Maximum Pump Absorbed Current                           | A       |           | 13.2                                                                         | 20.3      | 20.3      | 26.9      | 26.9      | 32.1      | 32.1      | 32.1      | 39.5      | 39.5      | 52        | 52        | CF        | CF        |
| Available External Pressure (Single)                    | PSI     |           | 32.2                                                                         | 36.9      | 35.0      | 40.3      | 36.7      | 33.6      | 31.8      | 33.2      | 42.7      | 43.5      | 38.6      | 31.3      | CF        | CF        |
| Tank Volume                                             | GAL     |           | 79                                                                           | 100       | 100       | 132       | 132       | 132       | 132       | 132       | 159       | 159       | 159       | 159       | 159       | 159       |
| FANS & CONDENSER                                        |         |           | Axial EC Fans & Copper Tube with Aluminum Fin Condenser                      |           |           |           |           |           |           |           |           |           |           |           |           |           |
| Fan Electronic Fan Speed Control                        | TYPE    |           | EC                                                                           |           |           |           |           |           |           |           |           |           |           |           |           |           |
| Fan Quantity                                            | QTY     |           | 4                                                                            | 6         | 6         | 8         | 8         | 8         | 10        | 10        | 12        | 12        | 14        | 18        | 18        | 18        |
| Fan Total Absorbed Power                                | kW      |           | 10.2                                                                         | 15.4      | 15.4      | 20.5      | 20.5      | 20.5      | 25.6      | 25.6      | 30.7      | 30.7      | 35.8      | 46.1      | 46.1      | 46.1      |
| Fan Total Absorbed Current                              | A       |           | 15.6                                                                         | 23.4      | 23.4      | 31.2      | 31.2      | 31.2      | 39.0      | 39.0      | 46.8      | 46.8      | 54.6      | 70.2      | 70.2      | 70.2      |
| Total Air Flow                                          | CFM     |           | 45,203                                                                       | 67,804    | 67,804    | 90,406    | 90,406    | 90,406    | 113,007   | 113,007   | 135,608   | 135,608   | 158,210   | 203,412   | 203,412   | 203,412   |
| NOISE DATA                                              |         |           | Distance measured in an open field at 33 feet from Condenser                 |           |           |           |           |           |           |           |           |           |           |           |           |           |
| Sound Pressure Level                                    | DB(A)   |           | 68.1                                                                         | 70.6      | 70.3      | 70.5      | 72.4      | 73.7      | 72.1      | 71.9      | 73.6      | 74.7      | 75.6      | 74.1      | 75.4      | 76.4      |
| ELECTRICAL DATA                                         |         |           | Does not include optional pump(s)                                            |           |           |           |           |           |           |           |           |           |           |           |           |           |
| Power Circuit                                           | V/PH/HZ |           | 460/3/60                                                                     |           |           |           |           |           |           |           |           |           |           |           |           |           |
| Full Load Current (FLA)                                 | FLA     |           | 135                                                                          | 167       | 194       | 216       | 246       | 280       | 302       | 330       | 354       | 386       | 412       | 486       | 531       | 579       |
| Minimum Circuit Ampacity (MCA)                          | MCA     |           | 143                                                                          | 176       | 205       | 228       | 260       | 296       | 313       | 342       | 367       | 400       | 426       | 498       | 544       | 593       |
| Maximum Overcurrent Protection (MOP)                    | MOP     |           | 172                                                                          | 212       | 248       | 274       | 314       | 358       | 357       | 391       | 418       | 457       | 486       | 544       | 596       | 650       |
| DIMENSIONS & WEIGHTS                                    |         |           |                                                                              |           |           |           |           |           |           |           |           |           |           |           |           |           |
| Length                                                  | IN      |           | 127                                                                          | 178       | 178       | 230       | 230       | 230       | 281       | 281       | 332       | 332       | 383       | 471       | 471       | 471       |
| Width                                                   | IN      |           | 87                                                                           | 87        | 87        | 87        | 87        | 87        | 87        | 87        | 87        | 87        | 87        | 87        | 87        | 87        |
| Height                                                  | IN      |           | 96                                                                           | 96        | 96        | 96        | 96        | 96        | 96        | 96        | 96        | 96        | 96        | 96        | 96        | 96        |
| Estimated Shipping Weight                               | LBS.    |           | 5,732                                                                        | 7,341     | 7,341     | 9,789     | 9,789     | 9,789     | 12,236    | 12,236    | 14,683    | 14,683    | 17,086    | 22,024    | 22,024    | 22,024    |
| Hydraulic Connections                                   | IN      |           | 5                                                                            | 5         | 5         | 6         | 6         | 6         | 6         | 6         | 6         | 6         | 8         | 8         | 8         | 8         |

\*Performance rated at 44°F outlet water, 54°F Inlet Water, 95°F Ambient, 100% water. Chiller capacity changes with operating conditions, consult Motivair for assistance. Location and installation of equipment by others © 2022 Motivair Corporation. Motivair reserves the right to modify specifications without notice. Reproduction of this brochure in whole or in part is prohibited.

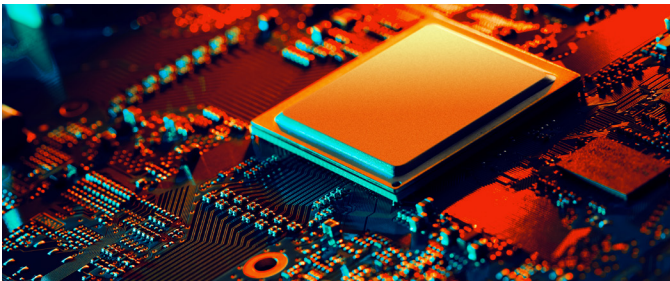
# We cool the most advanced technology on the planet

We discover, design, and develop resilient thermal technologies and strategies, and convert that into actionable insights and unparalleled value for our clients.

From climate research to finance, cloud to artificial intelligence, customers trust Motivair's cooling technologies so they can break new boundaries and help deliver tomorrow's innovations faster.

We're helping our clients discover cures for diseases, combat climate change, and make tomorrow's data-driven services more reliable and accessible.

We are touching millions of lives each day by providing the critical cooling technology to support productivity and innovation that is changing our world.



## DIRECT-TO-CHIP COOLING

Supercomputing isn't just in the lab anymore. The power of high-performance computing is scaling out as more enterprises and corporations look to utilize artificial intelligence for advanced decision-making and accelerate digital transformation.



## DATA CENTER & IT COOLING

Designed for and used by the enterprise data center and supercomputer owners and operators, our cooling technology is engineered to help you leap forward in scale, quality, and speed.



## THERMAL MANAGEMENT

When it comes to cooling your critical infrastructure, we work to customize specialty chiller technology for you, rather than selecting from a catalog



## CLIENT SERVICES GROUP

Manage every aspect of your cooling infrastructure, from planning and design to start up, commissioning and post-sale performance. Your business depends not only on our products but also our ability to respond when you need us.